HALEY & ALDRICH

ENGLAND GEOSYSTEM
ENVIRONMENTAL ENGINEERING

BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

TECHNICAL MEMORANDUM

IMPORT SOIL EVALUATION
USE OF PARCEL B SOIL AS IMPORT TO PARCEL C

To: **Mr. Brian Mossman**
Boeing Realty Corporation
3760 Kilroy Airport Way, Suite 500
Long Beach, CA 90806

From: **Haley & Aldrich, Inc.**

Date: **February 15, 2001**

Re: **Use of Parcel B Soil as Import to Parcel C, Import Soil Evaluation for the Boeing Realty Corporation, Former C-6 Facility – Parcel C, Los Angeles, California**

Haley & Aldrich, Inc. is herein providing this technical memorandum to summarize our recommendations regarding use of soil currently present on Parcel B as import to Parcel C of the Boeing Realty Corporation's (BRC's) Former C-6 Facility in Los Angleles, California (subject parcel).

OVERVIEW/PURPOSE

It is proposed that approximately 4,000 cubic yards of soil currently located on Parcel B be used as import soil for use as fill soil on Parcel C. The shallow soil (present from the ground surface to depths of approximately 12 feet below ground surface [bgs]), including the subject 4,000 cubic yards of soil, have been granted closure by the Los Angeles Regional Water Quality Control Board (RWQCB). In a letter dated January 7, 2000, the RWQCB indicated that no further action is required for the soil investigation and remediation related to the shallow soil (0-12 feet bgs) of Parcel B.

Kennedy Jenks Consultants (KJC) prepared an Import Soil Screening Program Plan for Parcel C, dated December 11, 2000. This plan has been used as guidance to evaluate import soil from "offsite" sources. The criteria presented in the plan were compared to analytical results of soil samples from soil proposed for use as import to Parcel C. Although closure of the subject proposed import soil was granted by the RWQCB, the above-noted import soil evaluation criteria was also used to evaluate possible placement of these soils on Parcel C. The purpose of this technical memorandum is to present a summary of the import soil evaluation of the subject Parcel B soil and recommendations for use as import to Parcel C.

LOCATION OF PROPOSED PARCEL B IMPORT SOIL

Conversations with Mr. John Marasco of BRC indicate that the subject proposed import soil is located on Parcel B at the northwest corner of 190th Street and Harbor Gateway. The soil will be obtained from depths of approximately 4 feet below ground surface (bgs). It is understood that these soils originated from Parcel B (e.g., they were not brought on the property as import soil during redevelopment grading activities).

ANALYTICAL RESULTS FOR PROPOSED PARCEL B IMPORT SOIL

Soil samples were obtained from Parcel B soil prior to redevelopment grading activities. Mr. Marasco indicated that the top several feet of soil on Parcel B were over-excavated, replaced, and compacted during grading activities. He described these activities as "flip-flopping", indicating that the soil was generally replaced at or adjacent to its original location.

Analytical results of soil samples collected from the subject portion of Parcel B were obtained from the July 1997 report prepared by KJC, entitled *Parcel A – Phase II Soil Characterization, C-6 Facility.* These samples include those obtained from the following borings: 2BB-1A-10 through 2BB-1A-17.

COMPARISON TO IMPORT SOIL GUIDANCE CRITERIA

Comparison of the above-noted analytical results with the import soil evaluation criteria indicate that of the 18 soil samples collected from depths of 1 to 4 feet bgs, 5 samples had reported results greater than the import soil criteria. These include:

Sample Identification	Depth (feet bgs)	Chemical	Reported Concentration (mg/kg)	Import Soil Criterion (mg/kg)
2BB-1A-1	1	Copper	21	20
2BB-1A-4	4	Barium	200	135
2BB-1A-13-4	4	Barium	140	135
2BB-1A-16-1	1	Barium	160	135
2BB-1A-16-1	1	Vanadium	45	38
2BB-1A-17-1	1	Barium	140	135
2BB-1A-17-1	1	TPH-oil	8,200	5,000

TPH–oil = total petroleum hydrocarbons as oil

A summary of the analytical data for the above-noted 18 samples and chemicals is presented in the attached Table 1.

The average of the reported concentrations for the above-noted 18 samples for copper, barium, cobalt, vanadium, and TPH-oil are:

Chemical	No. of Samples Tested	Range of Reported Concentrations (mg/kg)	Arithmetic Average Concentration (mg/kg)
Copper	18	5.5 to 21	11
Barium	18	63 to 200	116
Cobalt	18	6 to 11	8
Vanadium	18	23 to 45	30
TPH –oil	10	< 10 to 8,200	859

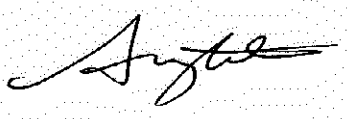
The average concentrations are less than the soil import criteria.

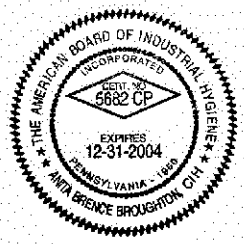
RECOMMENDATIONS FOR USE AS IMPORT SOIL

It is recommended that the subject 4,000 cubic yards of soil on Parcel B be used as fill soil on Parcel C due to the following conclusions:

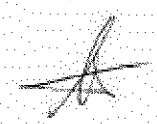
- The reported analytical results are generally less than or slightly greater (less than 2 times greater) than the import soil criteria.
- These soils have been granted closure by the RWQCB and originated from the subject facility property.
- The average concentrations of the above-identified chemicals within the subject soil are less than the reported discrete sample results, and are less than the import soil criteria. In addition, the soil at the sampled locations have been mixed with other site soil during redevelopment grading activities, and will be remixed during handling prior to and during proposed grading activities on Parcel C, potentially further homogenizing the soil and averaging the concentrations within the subject soil.

Sincerely yours,
HALEY & ALDRICH, INC.





Anita Broughton
Risk Assessment Task Manager



Scott Zachary
Project Manager

Attachments: Table 1. Summary of Analytical Results

Table 1. Summary of Analytical Results

Sample ID	Depth (feet)	TPH (as oil)	Barium	Copper	Cobalt	Vanadium
2BB-1A-9-1	1		110	21	8.2	28
2BB-1A-9-4	4		200	10	7.7	27
2BB-1A-10-1	1		65	6	6	25
2BB-1A-10-4	4		120	11	8.2	31
2BB-1A-11-1	1		63	8.2	6.6	23
2BB-1A-11-4	4		120	8.7	6.5	30
2BB-1A-12-1	1		90	7.9	7	29
2BB-1A-12-4	4		120	12	8.7	26
2BB-1A-13-1	1	97	110	7	6.9	27
2BB-1A-13-4	4	59	140	14	8.4	35
2BB-1A-14-1	1	5	120	5.5	7.9	33
2BB-1A-14-4	4	5	130	9.7	7.5	36
2BB-1A-15-1	1	11	86	6	8.4	30
2BB-1A-15-4	4	5	120	11	8	37
2BB-1A-16-1	1	5	160	19	11	45
2BB-1A-16-4	4	200	86	12	8.9	24
2BB-1A-17-1	1	8200	140	9.5	7.3	28
2BB-1A-17-4	4	5	100	18	10	33
	Count		18	18	18	18
	Average		116	11	8	30
	Minimum		63	5.5	6	23
	Maximum		200	21	11	45
		10				
		859				
		5				
		8200				

TPH = total petroleum hydrocarbons
Note - The highest of the total recoverable petroleum hydrocarbon (TRPH) or TPH (as motor oil) results are reported above.